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INTRODUCTION.

This REVIEW is based on reports for March, 1891, from 2,406 regular and voluntary observers. These reports are classified as follows: 171 reports from Signal Service stations; 118 reports from United States Army post surgeons; 1,567 monthly reports from state weather service and voluntary observers; 32 reports from Canadian stations; 183 reports through the Central Pacific Railway Company; 335 marine reports through the co-operation of the Hydrographic Office, Navy Department; marine reports through the "New York Herald Weather Ser-

vice;" monthly reports from the local weather services of Alabama, Arkansas, Colorado, Illinois, Indiana, Iowa Weather and Crop Service, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Mississippi, Missouri, Nebraska, Nevada, New England, New Jersey, New York, North Carolina, North and South Dakota, Ohio, Oregon, Pennsylvania, South Carolina, Tennessee, Texas, and Wisconsin, and international simultaneous observations. Trustworthy newspaper extracts and special reports have also been used.

CHARACTERISTICS OF THE WEATHER FOR MARCH, 1891.

The month was the coldest March on record from the lower Missouri valley to central Texas and thence westward to the Rocky Mountains, where the mean temperature was 5° to 8° below the average. The mean temperature was generally below the March average, except over the extreme northeast and southeast parts of the country and on the middle and south Pacific coasts, where the departures above the average temperature were small. The highest temperature reported by a regular station of the Signal Service was 94° , at Rio Grande City, Tex., and by a voluntary observer, 97° , at Fort Ringgold, Tex. The lowest temperature reported by a regular station of the Signal Service was -34° , at Fort Assiniboine, Mont., and by a voluntary observer, -44° , at Rhinelander, Wis. At stations in the Dakotas and north Nebraska the minimum temperature was 2° to 8° lower than previously reported for March. On the 14th and 15th frost was reported generally in the east Gulf states and north Florida, and tender vegetation was reported injured in North Carolina and north Mississippi.

The monthly precipitation was the heaviest ever reported for March at stations in the south part of the middle Atlantic states, in the Carolinas, Tennessee, Upper Michigan, northeast Minnesota, Kansas, Nebraska, east Colorado, north Utah, and west Montana. The precipitation was in excess of the March average, except over the northwest, southwest, and extreme northeast parts of the country, and at Lake Erie stations. On the northeast and middle-eastern slopes of the Rocky Mountains and over the middle plateau region more than double the usual amount of precipitation was reported, and at Key West, Fla., in the extreme northwest, the middle Atlantic states, the Ohio Valley and Tennessee, on the southeast slope of the Rocky Mountains, in the Missouri Valley, the upper lake region, and in the south Atlantic and east Gulf states the monthly precipitation was one-fourth to three-fourths greater than usual. On the south Pacific coast about one-fourth, and on the middle Pacific coast and over the southern and northern plateau regions one-half to three-fourths of the average precipitation for March was reported. Along the middle Atlantic coast and in the south Atlantic and east Gulf states farming operations were retarded by wet weather. The monthly snowfall exceeded 60 inches atumbres, Colo.; 50

inches at Blue Knob, Pa., and Summit, Cal.; and 40 inches at Alton, Kans., and Marquette, Mich. At the close of the month a depth of more than 100 inches was reported on the ground atumbres, Colo., more than 20 inches at mountain stations in south-central Pennsylvania, northeast West Virginia, Colorado, and northeast lower Idaho, and in upper Michigan.

Destructive local storms were reported at Wheatland, Cal., on the 5th, in western Mississippi, western Tennessee, Louisiana, and South Carolina on the 7th, in Alabama and South Carolina on the 8th, at Hess Road Station, N. Y., on the 13th, in Pike Co., Ga., on the 26th, at Key West, Fla., on the 27th, at Galena, Ill., and in Dickinson Co., Kans., on the 29th, and in Claiborne Co., La., on the 30th. Severe thunderstorms occurred in southeast Massachusetts on the 1st, in Mississippi and Georgia on the 8th, along the Hudson River, N. Y., on the 9th, in Florida and South Carolina on the 21st, on the North Carolina and New Jersey coasts on the 22d, and at Indianapolis, Ind., on the 30th. Destructive general storms occurred in Puget Sound on the 8th; over Long Island Sound and over Lake Ontario on the 13th, when the U. S. S. "Galena" and the tug "Nina" went ashore at Gay Head, Martha's Vineyard; in South Carolina on the 17th. A "norther" prevailed in California and Nevada on the 17-18th. A severe storm prevailed on the New Jersey coast on the 20th; on the North Carolina coast on the 24th, when a vessel was wrecked at Chicamomico and nineteen persons drowned; on the Virginia coast on the 26th; on the North Carolina and Virginia coasts, over Chesapeake Bay, and on the New Jersey coast on the 27th, when a steamship went ashore near Cape Henry and seven persons were drowned.

The first boat of the season arrived at Albany, N. Y., from New York City on the 25th. The Morris Canal, New Jersey, was open to navigation on the 30th. The first trip of the season between Detroit, Mich., and Cleveland, Ohio, was made by a steamer on the 12th. On the Mississippi River navigation opened at Davenport, Iowa, on the 25th, and the river was clear of ice at Saint Paul, Minn., on the 30th. On the Missouri River navigation opened at Sioux City, Iowa, on the 31st. On the 25th navigation on the Saint Clair River was entirely closed by ice, and on the 30th navigation was resumed. On the 31st lower Lake Huron was covered with floating ice and there